On some Fishes allied to Gymnotus. By Alfred R. Wallace.

My object is to call the attention of the Society to some curious fishes allied to the Electrical Eel, which are abundant in the fresh waters of South America. They present many modifications of form, and will probably constitute a distinct family or subfamily. They may be characterized as fishes of an elongate form, very slender posteriorly, without dorsal or ventral fins, but with a very long anal fin. The intestines are situated immediately behind the head, and occupy a very small portion of the entire length of the fish. The teeth are very small, or altogether wanting. The air-bladder is in some species very long, in others almost obsolete; and the scales are very minute, ovate, concentrically striate, and often so imbedded in mucus as to be invisible till scraped off. The gill-opening is generally very small, and the eyes and nostrils minute.

There seems to be sufficient variety of form and structure to justify the establishment of *five genera*.

1. The true *Gymnotus* (of which the *Gymnotus electricus* appears to be the only well-known species), characterized by the anal fin reaching the extremity of the tail, which is flattened; by the air-bladder extending almost the entire length, in a cavity beneath the vertebræ; and by having a single row of short acute teeth in each jaw.

2. The genus *Carapus*, to which five of my species belong. These have the tail cylindrical and pointed, extending beyond the anal fin; a band of minute teeth in each jaw; and a double air-bladder, generally of very small size. One of my species appears to be identical with *Carapus brachyurus* of Bloch.

3. A form, of which I have but one representative, which has a deep body, a rather large mouth, but *no teeth*, and a small round single air-bladder.

4. Two long-jawed species, which have a very small mouth, *no teeth*, and *no air-bladder*. The larger of these is probably the *Gymnotus rostratus* of Schneider.

5. The genus *Apteronotus*, which differs from all the preceding in having a small, but perfectly-formed and rayed caudal fin, a rather large mouth, with the lower jaw shutting within the upper, and the teeth rather acute and prominent in a row on the *sides* of the jaws only. My representative of this genus appears to be quite distinct from *Apteronotus albifrons* of Lacépède.

These fishes were all found near the sources of the Rio Negro and Orinoco, one of the most central positions in South America. They are most abundant in the smaller streams, and feed on minute aquatic insects. None of them, except the common *Gymnotus*, have any electrical properties. They are all eaten, though, owing to the number of forked or branched bones in every part of their bodies, they are not much esteemed.

The situation of the vent in these fishes is very peculiar, the intestine passing forwards from the stomach, instead of backwards, as is usually the case, so that they have the anus situated under the throat; in one of the long-snouted species it is actually considerably in front of the eyes, a peculiarity which I believe does not occur in any other vertebrated animal.

This fish, too, is remarkable for the very singular manner in which it is said to feed. It is asserted that it lives principally on ants and white ants, which it obtains by laying its tail out upon land. The ants, attracted by its mucous covering, crawl thickly upon it, when the fish dives down and leaves the ants struggling upon the surface of the water, where it is enabled to eat them at its leisure. The Indians assert that, when fishing at night, they often see this take place.

To give some idea of the distribution of fishes in the rivers of South America, I may mention, that of 205 species which I found in the Rio Negro,—

43 were spinous-finned fishes, principally *Percidæ* and *Labridæ*;
54 were *Siluridæ*;
80 were *Salmonidæ*;
24 were other soft-finned fishes, of the families *Esocidæ*, *Anguillidæ* and *Cyprinidæ*; and
4 were Ray fish (cartilaginous fishes).—*Zool. Proc.* July 12, 1853.

METEOROLOGICAL OBSERVATIONS FOR SEPT. 1854.

Chiswick.—September 1. Very fine. 2. Slight fog: very fine. 3. Foggy: very fine. 4. Foggy: slight haze: excessively dry air. 5. Very fine: hazy: fine. 6—10. Very fine. 11. Dense fog: clear: quite cloudless: very fine. 12. Dense fog: very fine. 13. Cloudy: rain. 14. Cloudy: slight rain: overcast. 15. Very fine. 16. Overcast. 17. Very fine. 18. Fine: cloudy: rain. 19. Overcast and windy: slight rain. 20. Cloudy: rain. 21. Clear: quite cloudless: fine: lightning in the evening. 22. Very clear: fine. 23. Densely overcast. 24, 25. Very fine. 26—29. Foggy, with very heavy dews in the mornings: very fine throughout the days: clear and cold at nights. 30. Dense fog throughout.

Mean temperature of the month ..... 56°·93
Mean temperature of Sept. 1853 ..... 55 ·45
Mean temperature of Sept. for the last twenty-eight years... 56 ·98
Average amount of rain in Sept. ..... 2·57 inches.

Boston.—Sept. 1—4. Fine. 5. Cloudy. 6. Fine. 7—9. Cloudy. 10—12. Fine. 13. Cloudy. 14. Rain A.M. 15—17. Cloudy. 18. Fine. 19. Cloudy: rain A.M. 20. Rain A.M. 21, 22. Fine. 23. Cloudy: rain A.M. 24. Cloudy: stormy A.M. and P.M. 25—29. Fine. 30. Foggy.

Sandwick Manse, Orkney.—Sept. 1. Cloudy A.M.: clear P.M. 2. Clear A.M.: cloudy P.M. 3. Clear, fine A.M.: clear P.M. 4. Rain A.M.: clear, fine P.M. 5. Cloudy, fine A.M.: cloudy P.M. 6. Drizzle A.M.: rain P.M. 7. Drizzle A.M.: cloudy P.M. 8. Cloudy A.M.: clear, fine, aurora P.M. 9. Clear, fine A.M. and P.M. 10. Bright, fine A.M.: clear, fine P.M. 11. Rain A.M. and P.M. 12. Clear, fine A.M.: cloudy P.M. 13. Clear A.M.: rain P.M. 14. Clear A.M.: showers P.M. 15. Showers A.M. and P.M. 16. Showers A.M.: cloudy P.M. 17. Bright A.M.: showers P.M. 18. Showers A.M. and P.M. 19. Bright A.M.: clear P.M. 20. Showers A.M.: cloudy P.M. 21. Bright A.M.: clear P.M. 22. Bright A.M.: cloudy P.M. 23, 24. Rain A.M.: clear P.M. 25. Showers A.M.: cloudy P.M. 26. Showers A.M.: clear P.M. 27. Clear A.M.: cloudy P.M. 28. Clear, fine A.M.: clear P.M. 29. Cloudy A.M. and P.M. 30. Hazy A.M.: clear P.M.

Mean temperature of Sept. for twenty-seven previous years . 52°·32
Mean temperature of this month ..... 55 ·07
Mean temperature of Sept. 1853 ..... 53 ·28
Average quantity of rain in Sept. for fourteen previous years 2·81 inches.